

### **REMARKS**

The Examiner states that Claims 1, 4-8, 10, 13-28, 36, 38-39 and 43-44 were pending in the above referenced application. Claim 21 having been previously cancelled, Claims 1, 4-8, 10, 13-20, 22-28, 36, 38-39 and 43-44 were actually pending. Claim 18 is amended and Claim 20 is canceled without prejudice. Therefore, Claims 1, 4-8, 10, 13-19, 22-28, 36, 38-39 and 43-44 are pending herein.

Applicant wishes to thank Examiner Chaudhuri for the telephonic interview of January 3, 2002. During that interview the objection under 35 U.S.C. §132 was discussed. No agreement was reached.

At page 4 of the instant Office Action, Examiner Mai states that "all substances of the telephonic interview on June 18, 2001 with the exception of no agreement was reached" (emphasis in the original). The undersigned respectfully asserts that the summary of such interview provided Applicant's last response was prepared from notes recorded by the undersigned during the interview and such summary is believed to be accurate.

### **Objection to the Specification under 35 U.S.C. §132 and Rejection under 35 U.S.C. §112, first paragraph:**

The amendment filed August 29, 2000 is objected to under 35 U.S.C. §132 for the introduction of new matter. In addition, Claims 38, 39, 43 and 44 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, has possession of the claimed invention. Applicant traverses both the objection and the rejection.

Both the instant objection and the instant rejection seem to be based on Applicant's disclosure at lines 3-5 of page 5 of the application that the "[t]emperature of the substrate within the reaction chamber is preferably maintained at from about 400°C to about 700°C, and more preferably maintained at about 500°C." Specifically the Examiner alleges that the

phrase "in excess of 500°C but less than 630°C" included in Claims 38 and 43, is not supported by the specification. Applicant disagrees.

It is well established law that "it is not necessary that claimed subject matter be described *ipsis verbis* [in the identical words] to satisfy the written description requirement of 35 U.S.C. §112" (*Haymes v. Takaya*, 6 USPQ 2d. 1448 (Bd. Pat. App. & Int., 1988) citing *Fields v. Conover*, 443 F.2d 1386, 170 USPQ 276 (CCPA 1971)). In *In re Johnson*, 558 F.2d 1008, 194 USPQ 187 (CCPA 1977), the CCPA, reversing the Board of Patent Appeals and Interferences, noted that *Johnson* was "simply claiming less than the full scope of the disclosure which is a perfectly legitimate procedure since it is for an inventor to decide what bounds of protection will be sought." (Id at 1019). In *Eiselstein v. Frank*, 52 F.3d 1035, 34 USPQ.2d 1467 (Fed Cir 1995), the court in evaluating claims filed in a CIP application to determine if such claims were supported by the disclosure of the grandparent to such CIP application stated "the grandparent application need not contain precisely the same words as are found in claims 8-18 [claims in the CIP]; rather, the application simply must indicate to a person skilled in the art that the range ... was intended to be approximate, i.e. to mean 'about.'" With respect to changing numerical range limitations, the analysis must take into account which ranges one skilled in the art would consider inherently supported by the discussion in the original disclosure. The court in *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), referred to in the M.P.E.P. at §2163.05 (III), found that "the ranges described in the original specification included a range of '25%-60%' and specific examples of '36%' and '50%' ... a limitation to 'between 35% and 60%' DID MEET the description requirement" (emphasis added).

In the instant application, Applicant has presented a broad temperature range and an exemplary approximate temperature within that range. Each include the word "about" to insure that one skilled in the art would know that the values recited are approximate and inclusive of values for each that are "in excess of" the specific temperatures recited. In addition to understanding the meaning of "about" and "in excess of",

Applicant respectfully asserts that one of ordinary skill in the art would know that where a range of temperatures is provided, that recitation of that range is inclusive of all temperatures within that range. That is to say that it is understood that the recitation of a temperature range from 100°C to 105°C is a short hand representation of that range and thereby eliminates the need to recite "100°C, 101°C, 102°C, 103°C, 104°C and 105°C," which where the range recited in the specification is from about 400°C to 700°C would be onerous. Applicant therefore asserts that the range of temperatures provided in the specification, in view of holdings of both *Eiselstein* and *Wertheim*, among others, is understood to include the recitation of 630°C. Therefore it must follow that Claims 38, 39, 43 and 44, including less than the full range recited in the specification DO NOT constitute new matter and the objection to the specification under 35 U.S.C. §132 and rejection of such claims under 35 U.S.C. §112, first paragraph, MUST be withdrawn.

### **Rejections under 35 U.S.C. §103**

#### **Vassiliev**

Claims 1, 4-7, 10, 16-20, 36, 38, 39, 43 and 44 stand rejected under 35 U.S.C. §103(a) for being unpatentable over Vassiliev (U.S. Patent No. 5,876,798) (hereinafter "Vassiliev"), as previously applied. Claim 20 has been canceled without prejudice making the rejection of such claim moot. Applicant traverses the rejection of Claims 1, 4-7, 10, 16-19, 36, 38, 39, 43 and 44.

Claim 1 recites, in pertinent part, "depositing an insulating material ... wherein the depositing occurs with a plasma being present in the reaction chamber." Each of Claims 4-7, 10, 16, 17 and 36 depend from Claim 1 and therefore inherit the recitation of this aspect of such claim.

Claim 18 recites, among other things, "while providing the ozone comprising reactant and the precursor having Si-F bonds to the substrate, providing a plasma within the reaction chamber." Each of Claims 19, 38, 39, 43 and 44 depend from Claim 18 and therefore inherit the recitation of this aspect of such claim.

In contrast, Vassiliev teaches a reduced pressure chemical vapor deposition process conducted in the ABSENCE OF PLASMA as clearly evidenced by the Claims 1-15 of Vassiliev, whereas the Examiner improperly characterizes such patent as teaching the use of a plasma deposition process. Applicant again acknowledges that the phrase "plasma enhanced CVD" does appear in Vassiliev, however the context of this appearance is within the statement that "methods such as plasma enhanced deposition MUST NOT BE INCORPORATED" (col. 6, lines 4-5, emphasis added). Thus, Applicant asserts that Vassiliev only refers to the use of a plasma as something to be avoided at all costs, even the cost of an higher deposition rate (see, col. 6, lines 6-7). Furthermore, where Vassiliev refers to a plasma deposition at column 6, line 12, such reference describes the structure in Fig. 2 with voids 25, which is specifically what the invention of Vassiliev is seeking to avoid. Thus Vassiliev states that Fig. 2 depicts "oxide layer 24, deposited using plasma enhanced CVD" and that "voids 25 have been incorporated inside 24 making it unreliable for future use" (see, col. 6, lines 8-14, emphasis added).

Applicant respectfully asserts then that the Examiner's repeated contention that Vassiliev teaches the use of a plasma is mistaken as such reference in clear and unambiguous manner teaches precisely the opposite. Applicant contends that the statement at column 6, lines 4-5 cannot be read in any other manner. As a result, since Vassiliev teaches away from that which Applicant recites in Claims 1 and 18, such art CANNOT be said to make such claims obvious and the rejection of Claims 1 and 18, as well as Claims 4-7, 10, 16, 17, 19, 36, 38, 39, 43 and 44, which depend, respectively, therefrom must be withdrawn. Action to this effect is requested.

Vassiliev in view of Homma and Vassiliev in view of Kirchhoff

Claim 8 stands rejected under 35 U.S.C. §103(a) for being unpatentable over Vassiliev, as applied to claims 1 above, and further in view of Homma (U.S. Patent No. 5,288,518) (hereinafter "Homma"), as previously applied. Claims 13-15 and 22-28 stand rejected under 35 U.S.C.

§103(a) for being unpatentable over Vassiliev, as applied to claims 1 above, and further in view of Kirchhoff et al. (U.S. Patent No. 6,057,250) (hereinafter "Kirchhoff"), as previously applied. Applicant traverses.

Applicant's remarks with regard to Vassiliev, above, are incorporated herein. Thus, Vassiliev is shown to specifically teach away from that which is recited in Applicant's Claim 1 and hence also Claims 8, 13-15 and 22-28 which depend therefrom. Since Vassiliev is shown to teach that a plasma should not be used, a combination of Vassiliev with either Homma or Kirchhoff cannot be made. Thus, the instant rejections of Claims 8, 13-15 and 22-28 must be withdrawn. Action to this effect is requested.

In summary, Applicant having responded to each of the rejections and objections, respectfully asserts that Claims 1, 4-8, 10, 13-19, 21-28, 36, 38-39 and 43-44 are in condition for allowance. Action to that effect is earnestly sought. If, however the Examiner's next action is anything other than a Notice of Allowance, the Examiner is requested to call the undersigned to schedule a telephonic interview. The undersigned is available during normal business hours, Pacific Coast Time.

Respectfully submitted,

Dated: Jan 22, 2002

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. .... 09/146,839  
Filing Date ..... September 3, 1998  
Inventor ..... Anand Srinivasan et al.  
Assignee ..... Micron Technology, Inc.  
Group Art Unit ..... 2814  
Examiner ..... A. Mai  
Attorney's Docket No. .... MI22-1017  
Title: Methods of Forming Fluorine Doped Insulating Materials

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**  
**ACCOMPANYING RESPONSE TO September 24, 2001 FINAL OFFICE**  
**ACTION**

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

18. (Amended) A method of forming a silicon oxide having Si-F bonds, comprising:

providing a reaction chamber at a temperature in excess of 400 degrees Celsius ( $^{\circ}\text{C}$ ) but less than  $630^{\circ}\text{C}$ ;

positioning a substrate within the reaction chamber;

providing an ozone comprising reactant and a precursor having Si-F bonds to the substrate within the reaction chamber;

while providing the ozone comprising reactant and the precursor having Si-F bonds to the substrate, providing a plasma within the reaction chamber; and

causing a silicon oxide having Si-F bonds, to deposit onto the substrate within the reaction chamber at a rate of from about 1000 angstroms per minute ( $\text{\AA}/\text{min}$ ) to about 10000  $\text{\AA}/\text{min}$ .

Cancel Claim 20 without prejudice.

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